

LA-UR-20-24147

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Title: Operational and Mission Highlights A Monthly Summary of Top Achievements May 2020

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Intended for: Monthly Newsletter

Issued: 2020-06-08

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# Operational and Mission Highlights

A MONTHLY SUMMARY OF TOP ACHIEVEMENTS

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**May 2020**

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## Actinide Chemistry's War Reserve Qualification Work Supports TA-55

Actinide analytical chemistry activities in support of TA-55 operations for War Reserve qualification directly impact the First Production Unit (FPU). Data evaluation and reporting were completed for several development and production samples at TA-55 under the current minimum-safe operational status. Additionally, teams have continued to support the Weapons programs by completing and submitting qualification plans, evaluating qualification data, and optimizing procedures and protocols. In the coming weeks, actinide analytical chemistry operations will resume with a limited workforce, adhering to recent LANL guidance, in order to support the mission-critical Plutonium Sustainment milestones and deliverables.

## Actinide Operations Divisions Collaborate, Show Tremendous Progress

Pit Technologies (PT) experienced a very successful week in terms of progress made at the Plutonium Facility. A significant number of processes were completed, including coalescence runs, molten salt extraction, and electro-refining rings. Moreover, PT continued work in the Foundry and other machining projects.

Working alongside Actinide Materials Processing & Power (AMPP) groups, PT gained new space from a waste and material containers inventory and disposition for future production. AMPP and Nuclear Process Infrastructure teams continued to clear waste items out of the facility and transfer SAVY containers (one of the few packaging configurations for staging plutonium outside a glovebox) for reprocessing/re-use. In a two-week period, 54 items were removed from PT floor space, with more than 30 SAVY containers recovered. Finally, cast DHS pucks were transferred for machining, and 18 newly updated procedures incorporating COVID-19 precautions were reviewed and completed (these procedures are necessary for upcoming assembly operations).

## Detonator Production Making Progress Toward FPU

The B61-12 Life Extension Program (LEP) continues making progress toward First Production Unit (FPU). As challenges with nonnuclear components are being resolved, the NNSA proceeded with a First Production Capability Unit (FPCU) enabling the Pantex Plant to define and develop assembly procedures in anticipation and preparedness of War Reserve (WR) production. In order to proceed with the FPCU, mock 1E40 detonator cable assemblies were designed, fabricated, and accepted for product quality prior to shipment. On May 5, the NNSA Los Alamos Field Office and Triad Staff worked together to successfully perform quality acceptance activities on the 1E40.

The successful delivery of the mock 1E40 component is an example of collaboration and partnership between the Los Alamos Field Office, the Kansas City Field Office, and M&O Partners. Also this week, among many other efforts to support employee safety amidst the COVID-19 outbreak, Detonator Production teams assembled 20 hand-sanitization stations and placed them in high-traffic/high-use areas around TA-22, in support of "return to work efforts."

## Heat Source Production Sells Diamond-Stamped HSFAs, Meets Deliverables

In a historic sale for the Actinide Material Power & Processing Division, a large batch of mark quality, heat-source final assemblies (HSFAs) were Diamond Stamped by the NNSA during the week of May 11. (Diamond Stamping is the quality assurance process that confirms that products have met all manufacturing, safety, and security requirements.) This large sale is the culmination of months of hard work by AMPP-1 employees, as well as numerous support organizations. AMPP-1 has continued to drive forward to meet deliverables during these unprecedented COVID-19 times. The team, which produces heat sources from plutonium-238 — an essential mission for national security — has also completed batches of aqueous processing, resulting in the production of several kilograms of fuel since January, enough to support significant ongoing new production HSFAs. To produce the heat sources, the teams in AMPP-1 performed not only aqueous processing but also fuel fabrication and encapsulation. AMPP-1 encapsulates fuel in HSFA liners that serve as the primary

confinement, or the first of three welded containers. Many HSFA liners, with newly process fuel, have been built amidst COVID-19 restrictions. Additionally, the team finished assembling and testing of two batches of HSFA during the same mission-essential timeframe.

## High-Explosives R&D Infrastructure Modernization Achieves CD-0

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On April 2, the Lab's proposed Energetic Materials Characterization (EMC) project received a CD-0 from the NNSA, giving the thumbs up for Los Alamos to pursue further planning activities for acquisition. The EMC project aims to replace 18 aging buildings at TA-9 with one modern, integrated facility by the late 2020s — significantly enhancing workers' safety and efficiency. According to the Laboratory's proposal, this new facility would provide complete high-explosives R&D functions supporting nuclear weapons design and detonator production missions, .

## New Capabilities for Pit Surveillance

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The plutonium surface science laboratory at the Target Fabrication Facility (TFF, 35-213) is providing new and expanded resources to support the Laboratory's stockpile stewardship mission. Nuclear Materials Science researchers are supporting the Pit Surveillance program with spectroscopy and microscopy performed at the TFF. This work complements and provides depth to capabilities at TA-55 within PF-4, and is a direct step toward having additional capabilities that will support the Plutonium Sustainment program, particularly pit manufacturing and the Laboratory's 30 pits-per-year mission.

The Laboratory's Pit Surveillance program relies on a suite of destructive and nondestructive analytical techniques that assess the condition of pits with respect to their design specifications and to ensure the safety and reliability of pits within the nation's stockpile. The results of these studies are key to the Laboratory's mission in assessing the current stockpile, and are important to the Laboratory's missions in pit manufacturing, plutonium aging, and fundamental plutonium science.

To execute this work, researchers use a highly adaptable, multi-technique system known as the Physical Electrons VersaProbe III. This new, advanced

instrument was acquired with support from the Plutonium Sustainment program, with the first plutonium sample introduced in October 2017. Its combination of spectroscopy (to identify elements and bonding configurations), coupled with microscopy (to identify surface morphology) provides a unique plutonium surface science capability. Additional techniques that are available, if desired, in the future include time-of-flight secondary ion mass spectroscopy, infrared spectroscopy, atomic force microscopy, ellipsometry, and profilometry.

Complementing a suite of tools available at PF-4, these techniques have provided answers to questions vital to the Pit Surveillance Program. Results provided to the program have led to key milestones and deliverables and serve as an example of the Laboratory's increased agility in standing up new capabilities that support its mission.

## NMC&A , FPU, & WIPP Lead the List of 'Weapons Production' Achievements

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The March Nuclear Material Control & Accountability (NMCA) inventory was completed for critical pit processing areas, with critical accounts released on April 28. The Pit Technologies Division has resumed plutonium metal production with the completion of two electrorefining (ER) and two MSE runs. More than 30 production-essential procedures have been reviewed and approved for resumption following COVID-19 guidelines. Walkdowns and procedure reviews with workers were undertaken in the foundry and machining areas in preparation for resumption of activities the week of May 4.

The staff that supports engineering evaluations and product realization have also returned to onsite work on a part-time basis to perform classified computing operations. Personnel are working to integrate and prioritize FY20 schedules as post-inventory deliberate operations proceed. Each of these steps are crucial for continued progress toward First Production Unit (FPU).

Meanwhile, the Nuclear Process Infrastructure Division sent two shipments of transuranic waste drums to the Waste Isolation Pilot Plant (WIPP), on schedule, on both April 30 and May 7. The team also characterized 180 drums, exceeding their goal of 175. This rate of characterization achieves what is needed to sustain ongoing shipping rates that continue to support the mission by clearing space for future pit production.

## Raising Material-at-Risk Limits Enables Greater Productivity while Maintaining Safety

Multiple divisions within Weapons Production worked together to make changes to Material-at-Risk (MAR) limit procedures to allow more movement in the Plutonium Facility (PF)-4 basement and waste-shipping pads. On May 4, the NNSA Los Alamos Field Office approved a change to the Documented Safety Analysis, raising the limit of allowable MAR in the PF-4 basement. This change will provide increased operational flexibility to move drums from the manufacturing areas to be staged in the basement prior to secure moves to the waste pads outside PF-4. This operational flexibility supports increasing manufacturing rates for pit manufacturing and plutonium-238 related products while maintaining a lower operational dose on the manufacturing floor(s).

## Weapons Production Group Adjusting Schedules to Get Work Done at PF-4

The Heat Source Technologies group within ALDWP has developed new daily scheduling tactics in order to predict a dependent linear production line, coordinate support organizations, ensure that the right people are on site at the right time, and move production forward amidst the social distancing requirements in the Plutonium Facility. The group successfully synchronized this complex new situation with their six internal teams and across fifteen external support organizations with a sync chart that is communicated daily, which also reduces population density in the facility to the necessary minimum. The six internal teams communicate daily to make sure everyone is tied in with the production flowsheet. De-conflicting issues and being flexible with changing requirements has proven challenging, but successful. The organizations that support this important production line are hyper-responsive and supportive. With rotating personnel schedules, and evolving work and facility requirements, daily communication between support organizations has successfully ensured continuity in operations.

ALDWP management issued a formal standing order (PA-SO-01083) on April 27, 2020, which was developed to provide the social distancing guidance and expectations for COVID-19. The procedure details conduct of operations measures, various scenarios in which employees can best apply social

distancing guidelines depending on their work space, room occupancy limits, guidance for entry and exit of security portals, and cleaning information. The procedure offers a formalized, readily available instruction for all ALDWP employees to access and understand easily.

### SCIENCE, TECHNOLOGY, AND ENGINEERING

## Bioscience Launches SARS-CoV-2 Genomic Data Website

Bioscience Division scientists have launched a new research website to facilitate analysis and interpretation of SARS-CoV-2 genomic data to help improve the global response to the COVID pandemic. <https://covid19.edgebioinformatics.org/>

The COVID-19 Genome Analytics site comprises several tools, including a tailored bioinformatics workflow based on the fully open-source EDGE Bioinformatics platform developed at Los Alamos and originally released in 2017. This mini-version of EDGE consists of a user-friendly interface that takes raw genome sequence data (from COVID-19 patients) as input, and fully assembles complete, high-quality SARS-CoV-2 genomes that are ready for submission to data repositories such as GenBank.

More than 10,000 SARS-CoV-2 genomes have thus far been sequenced, and with every new sequence comes a more comprehensive understanding of the virus and its evolution. The COVID-19 Genome Analytics site not only facilitates the assembly and addition of more high-quality genomes, but it also helps scientists analyze how the virus is evolving and how these changes impact our ability to detect and identify the virus. For instance, LANL scientists are also computationally screening published diagnostic assays against the increasing number of SARS-CoV-2 sequences to determine the most reliable assays for diagnosis. This computational assay validation is also available on the COVID-19 Genome Analytics site, as well as information tracking both the growth in genomic data and in confirmed COVID-19 cases in the USA and around the globe.

## Exascale Class Computer Cooling Equipment Project Receives “Certificate of Full and Final Occupancy”

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In an update to the certificate of beneficial occupancy that was recently granted to the Exascale Class Computer Cooling Equipment (ECCCE) project, a major milestone was completed this week with the signing of the certificate. This milestone means that all systems installed by the project have been tested and approved with no life safety issues in the facility.

This new cooling capability will support future world-class, high-performance computer systems at LANL. These systems will be used to modernize the nuclear deterrent and to understand the effects of aging in the deployed stockpile. The first of these systems to use this capability will be Crossroads in late 2021. Crossroads will include a number of major advances in computing technologies for simulating very complex physical systems.

## HIV Vaccine-Research Team Shifts to SARS-CoV-2

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Building on previous work designing an experimental HIV vaccine being tested in two human vaccine efficacy trials, the Los Alamos National Laboratory HIV team is now deploying its expertise in genetic databases and bioinformatics against the novel coronavirus SARS-CoV-2, the virus that causes the COVID-19 disease.

Three main thrusts are underway from the HIV team: developing a T-cell response vaccine approach, tracking the origin of the pathogen, and building a robust bioinformatics pipeline to track the virus's evolution. While this work focuses on attacking the virus itself, other bioinformatics and modeling efforts across the Laboratory aim at predicting disease spread to support decision making by government and health agencies.

## LANL Supports COVID-19 Research Around the World

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The science of COVID-19 genomics, sequencing, and bioinformatics was the focus of a web informational sharing call held on April 16 that included nearly 50 participants from DTRA's Biological Threat Reduction Program, LANL's Bioscience Division, and partner

laboratories in 10 countries spanning Africa, Central Asia, and South East Asia.

This call was part of Bioscience Division's on-going DTRA program in next-generation genomics and diagnostics that includes continuous bioinformatics reachback support to partner laboratories in the Republic of Georgia, Ethiopia, Jordan, Uganda, and other countries, as well as in-person trainings each year. Thursday's webinar participants were primarily from public health diagnostic laboratories that are on the front line for testing and diagnosis of COVID-19.

Los Alamos scientists shared new research highlights on SAR-2 COV; recommended approaches to biosafety, sampling, and molecular diagnostics for COVID-19; and discussed the topic of genomic sequencing for pandemic tracking. This informational sharing webinar was the first of multiple virtual opportunities for participant scientists to engage in real-time troubleshooting with genomics experts at Los Alamos. From this effort, a virtual Threat Reduction Network has also been created with all the past sequencing and genomics workshop participants at Los Alamos to further enable continued connections.

## Making Progress for BRL Readiness

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The new Bioscience Research Laboratory (BRL) is almost ready for occupancy as the Laboratory construction Red Team is working to finalize installation of the modular building. The BRL will provide nearly 4000 square feet of new biological laboratory space for experimental research ranging from virology and mammalian culture to microbiome and environmental research. In accordance with social distancing guidelines, the Red Team has continued work on a number of aspects: landscaping has continued; electrical, gas, and sewer tie-ins are proceeding; and fire suppression testing is expected early May. In addition, specialized electrical work for the autoclave room has been requested. The Red Team had a walkdown with the Facility Operations Directors (FOD) last week to discuss the master equipment list and learned that the final completion of the subcontractor's work may occur in early June. After this milestone, the FOD will be able to begin occupancy approvals.

## MOSAiC Research Expedition Studying the Arctic Moves Toward Norway

In the current phase, LANL technicians will spend 10 days moving instruments out of Met City before the research vessel *Polarstern* leaves the ice in mid-May to head toward Svalbard, Norway. Off the coast of Svalbard, they will meet up with two other German research vessels to complete the next crew and supply exchange. Ahead of the exchange, LANL-ARM staff for the next leg of MOSAiC are safely quarantining in Bremerhaven, Germany. The plan right now is for the *Polarstern* to get back to the ice in mid-June to finish the expedition. During the trip from and back to the ice, some ARM instruments will continue to operate on the *Polarstern*. The goal of the MOSAiC expedition is look at the Arctic as the epicenter of global warming and to gain fundamental insights that are key to better understand global climate change. Hundreds of researchers from 20 countries are involved in this endeavor, including scientists from LANL.

## Watershed Supplemental Environmental Project Completed at LANL

This overall project consisted of individual subprojects that either reduce potential sediments transport off of or manage storm water discharged from Laboratory property. This scope of work included developing low-impact development (LID) standards, guides, and a master plan for the Laboratory, as well as designing eight LID projects for potential implementation while constructing 11 more projects.

These projects included six watershed-scale projects (two in North Ancho Canyon watershed, two in Mortandad watershed, one in Sandia watershed and one in Cañon de Valle watershed) and five individual LID projects in the TA-53 and TA-03 areas of the eight designed. Field implementation began in 2017 and wrapped up in February 2020.

## Woman Engineer Magazine Names the Laboratory Ninth among “Top 20 Government Employers”

The Laboratory ranks ninth on a list of top 20 government employers, according to *Woman Engineer* magazine’s 29<sup>th</sup> Annual Readers’ Choice Awards, which were announced in the magazine’s spring 2020 edition.

Readers of *Woman Engineer* magazine selected the top companies and/or government agencies for which they would like to work or which they believe would provide a positive work environment for woman engineers.

Only three DOE national laboratories were named among the 2020 recipients. This is at least the fourth time the Laboratory has been named for this award, which is indicative of its focus on diversity and inclusion strategies related to talent acquisition and retention. Between 2010 and 2020, the number of women R&D managers increased from 18 to 23 percent, a direct reflection of concerted efforts to promote women in that group. Women R&D engineers also rose from 16 to 19 percent in that timeframe.

### MISSION OPERATIONS

## Employee Testing for COVID-19 Begins

The Laboratory kicked-off its pilot testing program on Tuesday, safely conducting 49 sample collections this week. All of the test results were negative. Additional testing is slated to occur next week. Employees who test positive must go into a 14-day self quarantine and are given detailed instructions on how to quarantine safely. Once the pilot program is complete, the Laboratory will evaluate how best to expand the program based on experience from the initial testing. The Laboratory continues to seek all possible avenues for acquisition of test materials, in collaboration with Sandia National Laboratories.

## GSA Provides Tips to Minimize Spreading COVID-19 in Fleet Vehicles

The U.S. General Services Administration (GSA) Fleet has provided guidance for the Laboratory’s Fleet Management team to help employees minimize the spread of COVID-19 while using a fleet vehicle. Each new driver must disinfect the fleet vehicle by cleaning all frequently touched surfaces. Here’s what to do:

1. Sanitize frequently touched vehicle surfaces regularly.
2. Test the selected cleaning agent in an inconspicuous location in the vehicle, as some cleaning agents could damage the interior or exterior of a vehicle.

3. Wash your hands before and after driving.
4. Once you have finished driving the vehicle for the day, thoroughly wipe down the vehicle with disinfectant wipes or other appropriate cleaning solutions.

This advice highlights how the Laboratory and its partners work to ensure a safe onsite environment as employees continue the Laboratory's important work.

## IT Support Enabling Teleworking

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During teleworking operations, the Laboratory's IT Service Desk continues to quickly respond to and resolve 50.6% of IT support tickets on the very first call. The desk fielded 1,274 calls in a recent week, with an average customer wait time of just 1 minute, 6 seconds. 9,080 laptops have been encrypted and setup for home use since teleworking operations began, and over 2,000 new laptops are expected to be delivered to users from now to the end of May. Additionally, a new interactive web series streamed live twice a week on Webex features solutions to the most common teleworking issues that offsite employees face, such as how to access the VPN, how to use approved collaboration platforms like G Suite and Webex, how to safely and securely patch/update systems from offsite, and more. In its second week, the series has greeted 50 to 190+ participants into each live session, with thousands of hits to the recorded videos of each session, which are posted later for employees to watch at their convenience.

## LANL's Accountability Drill Draws Response from Virtually the Entire Workforce

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This accountability drill, which achieved a 98.8% response rate over 4 hours, was used to verify estimates of telework vs. onsite worker populations. Analysis of payroll data, absenteeism rates, covid charge code usage, student data, and travel data was used to reconcile and validate our results. More than 70% of our workforce responded within the first 20 minutes of the drill. In summary, LANL has over 9,100 employees teleworking and over 2,300 working onsite today. Approximately 80% of our working staff are teleworking and 20% of our working staff are onsite. The third formal accountability of LANL employees in a heightened telework condition was completed on May 13, 2020.

## LANL's COVID-19 Safety Training Achieves Wide Participation

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More than 8,300 credits were awarded within just the first two weeks of Laboratory's new training course, "Working Safely at LANL During the COVID-19 Pandemic." This mandatory training for workers returning to the Laboratory campus offered instruction on the importance of social distancing, handwashing, cleaning and disinfection procedures, and the proper use of face coverings.

## Major Maintenance Continues at a Higher-Than-Expected Rate

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Amid COVID-19, maintenance work has proceeded at a higher-than-expected rate. In the past two weeks, 63% of the allocated budget has been spent with just 55% of the year elapsed. This maintenance work includes replacement of significant equipment, such as boilers, chillers and air compressors, and performing loading dock repairs across the Lab. Since January 2020, the Maintenance and Site Services (Division) has completed 3,365 preventive maintenance work orders. In addition, Maintenance and Site Services has maintained a more than 98% on-time completion rate for the preventive maintenance work. Maintenance and Site Services is performing all of the regulatory, planned maintenance across the site. This work is ongoing throughout the Facilities and Operations portfolio. The maintenance work illustrates how the Lab embraces and executes its mission and the Lab agenda, while ensuring a safe, onsite work environment.

## Network Infrastructure Projects Support Teleworking; MFA Work Resumes

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Network infrastructure teams have expanded the Lab's virtual teleconferencing capabilities, recently supporting an all-managers' WebEx meeting with 1,066 concurrent participants. Typical daily WebEx usage sees about 1,200 conferences a day, far more than the number of meetings held through Broadsoft telephonic conference calls. Meanwhile, the Multi-Factor Authentication (MFA) initiative — paused during the initial shift to telework operations — has resumed, and last week 96 "LANL zTokens" were distributed to the first batch of customers. Key to ensuring network infrastructure security, LANL zTokens are being provided to approximately 5,000 uncleaned users until

they eventually receive HSPD-12 badges. LANL zTokens provide the same level of network authentication as HSPD-12 badges and their ongoing issuance, especially during limited telework operations, will facilitate LANL's timely compliance with Level 3 MFA requirements established by the NNSA.

## **New Contractor Assurance System Key to Making Lab a High-Performing Institution**

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A new contract with DevonWay, an operations management software company, replaces the Laboratory's Institutional Contractor Assurance System (iCAS) that manages performance of the management and operations (M&O) contract for the Laboratory. iCAS is the means by which Triad provides reasonable assurance to the federal government that LANL is delivering on its mission while safely, efficiently, and effectively meeting its contractual requirements. iCAS was identified in the 2020 Laboratory Agenda as part of systematic process improvements to drive increased rigor and efficiency in work execution, and is specifically mentioned in the Agenda as being as a system that is key to LANL becoming a higher-performing organization.

The new software includes an array of modules that include issues management, audit and assessment, general actions tracking, risk management and observation, and operational awareness. This suite of tools will be key in implementing a robust institutional performance management process and automating and streamlining manual and paper processes.

## **New OnLine Tool Enhances Employee Efficiency**

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A new internal homepage application — called My Portal — now provides easy access to business applications, such as UTrain, Time & Effort, Phonebook, and Maps. By providing a consolidated location for notifications with convenient links for employees to take action on their most common tasks, like completing training requirements and entering time and effort, My Portal should shorten the time it takes employees to complete basic requirements. The tool's presence on the LANLInside homepage promises, among other things, to reduce the number of employees locked out of their building or computer for not taking their annual security training. Features of the new tool also include rapid search and quick

links for people and applications, along with the ability to save favorite links for easy access to frequently used applications. MyPortal's improved user experience will make things easier and enhance process efficiency for employees and managers across the Laboratory.

## **New Software Application Automates Processing, Registration of New IT Equipment**

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The Laboratory's Software & Applications Engineering Division developed a web application that provides EasyIT the ability to account for barcoded property quickly and accurately. The new tool interacts with the Sunflower application (the Laboratory's property management system) to automate registration of unclassified devices into Hostmaster, the computing device registration database. This interaction eliminates many of the manual processes originally performed by the EasyIT team and property administrators. The automation played a crucial role in accurately processing and registering millions of dollars of new property purchased as the Laboratory shifted to teleworking conditions as a result of the COVID-19 pandemic.

## **New Training Module to Help Employees Prevent the Spread of COVID-19**

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A new training module has been developed to help LANL employees maintain a safe working environment when returning to onsite work. The training provides information on social distancing, LANL controls where social distancing cannot be maintained, proper cleaning and disinfection techniques for work areas and PPE, and the proper use of face masks/coverings, according to guidance from the CDC. Completion of this training is required for any employee prior to resuming onsite work.

## **Occ Med fields hotline calls, offers services**

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Occupational Medicine is meeting the needs of employees through limited onsite clinic operations, telehealth services, and hotline staffing support. Occ Med has provided 8 a.m. to 5 p.m. daily nursing support for the Lab's COVID-19 hotline since March 16; medical providers (physician, nurse practitioner, physician's assistant) joined the effort starting

March 30. Employee calls to the hotline, which is hosted by the Emergency Operations Support Center, range from 50 to 150 per day. If callers talk about complicated medical issues, a nurse or provider takes the call. The majority of calls have been about risk factors: Was the contact enough to be considered high risk? How can I protect myself?

DOE is tracking (for all the DOE enterprise) the number of employees in isolation, the number of COVID tests pending, as well as how many tests are positive or negative. EOSC communication staff is compiling this data and reporting it based on hotline calls. The medical staff assists in documenting these numbers. All actual “return to work” visits or calls are handled by Occ Med. All questions or concerns (even related to “How do I return to work?”) and reports of self-isolation or COVID test status are handled by COVID hotline staff.

In addition to providing hotline support, Occ Med has continued limited operations onsite at the Occupational Medicine Clinic. The team is working hard to return employees back to the work force after self-isolation or illness. On March 30, Occ Med medical staff returned 46 employees back to the work place, either in person or by phone. Staff are also available for any new work-related injuries and follow-ups; some follow-ups are handled over the phone. Many Occ Med services (such as FMLA, FFD as well as psychological support through EAP) are still fully functioning on a telework platform, and employees are encouraged to call Occ Med at 667-0660 for assistance (667-7339 for EAP).

## **Operational Readiness Updates 261 Procedures to Conform with COVID-19 Standing Order**

In the last three weeks, a total of 261 procedures were reviewed, cleared, and implemented to ensure safe operations. The COVID-19 standing order groups the existing procedures into three tiers: those that can be executed as written while maintaining 6’ social distancing, those that cannot be executed with social distancing but can be executed without the need for significant face to face contact, and those that cannot be executed under either circumstance. Procedures in all three tiers were reviewed and released with new levels of controls to ensure safety and security amidst all three circumstances. This effort required the significant attention to detail of the employees of the

ORI division to ensure smooth operations are able to safely continue.

In addition to the procedure release process, ORI also performed 17 Fission Material Handler (FMH) Working Person-in-Charge (PIC) Oral Boards in the past three weeks, and are forecasted to do a total of 35 by the end of May. These Oral Boards include senior management to verify that high standards are maintained in the level of knowledge, conservative decision-making, and casualty response. A crucial enhancement for this training program, the Oral Boards serve as the final step to ensure FMH workers are fully prepared, informed, and trained to lead our mission critical operations in the Plutonium Facility.

## **Payroll Continues Uninterrupted for 12,000+ Employees; Payroll Personnel Proactively Reaching Out to Address Issues**

Timekeepers and payroll staff in the Controller Division have succeeded in processing payroll for 12,000+ employees during the Laboratory’s shift to teleworking, without a single interruption to employee pay. Under normal operations, Craft Payroll timekeepers manually key-in 1,200+ hard-copy timecards daily. In order to eliminate physical interaction between timekeepers and craftsmen/-women, the team devised a new contactless, scan-based system that ensures work is managed and performed in an accurate and timely manner, while maintaining a safe and healthy work environment. Craft Payroll staff continue to make their weekly payroll deadlines — contractually bound by craft labor unions — while working in new work environments and under new requirements. For non-craft employees, Controller Division staff worked with employees, timekeepers, and managers across the Laboratory to help offsite employees submit timecards before the Monday morning processing deadline — a push that led to a near 100% on-time-submission rate for more than 10,000 employees (and on-time paychecks three days later).

In addition, the Payroll Team has been attending other departments’ team meetings to inform, answer questions, and listen to feedback on policy, timecards, and other payroll-related topics. Payroll team representatives have attended several group meetings to date, but advanced their reach last week by conducting training through WebEx — where a virtual training garnered ~65 attendees, including a Division

Leader, Group Leader, Deputy Group Leader, five Team Leaders, their staff, and their primary timekeeper. This Webinar was an opportunity to provide great customer service, educate, and boost morale during teleworking operations.

## **PF-4 Safety Basis Improves Fire Safety and Power Supply**

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ALDWP has completed the final phase of the 2018 Technical Safety Requirements (TSR) revision. As a result, PF-4 now has four safety class fire pumps for our fire suppression system, which doubled our safety class pump capacity. This capacity will provide longer action times in the case of a mechanical problem with a pump house or a diesel-driven pump. Under the previous guidance, if power was lost to the diesel fire pump and diesel generator, there was only 12 hours in which to restore power before ceasing PF-4 operations. Now, with the redundancy of four safety class fire pumps, personnel have up to 45 days to restore either the applicable fire pump or the diesel generator.

## **Reductions in Water Usage Enhance LANL Operations**

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HPC recently enhanced its supercomputing capability through continued sustainability efforts by reducing the amount of water used to cool supercomputers. HPC has collaborated with the Sanitary Effluent Reclamation Facility (SERF) to creatively solve problems and make innovative changes that improve efficiency. Benefits are focused on increased HPC cooling capability with decreased water use, decreased spending, and increased total cooling capacity. The new measures involve a fundamental change in the water purification process. Previously, water had a long journey before it was cleaned. Now, thanks to a new route that gets the water to filtration equipment sooner, SERF is able to significantly reduce the amount of chemicals needed while sending much cleaner water to HPC. The result is that the Laboratory's supercomputers can be cooled with half the water than was previously needed. When the cooling towers are finished with the water, it is sent to saturate the Sandia Canyon wetlands. HPC is contributing to the Laboratory's mission and efforts in sustainability through operational changes and solutions that will continue to produce benefits for both the Laboratory and the environment.

## **Roof Repairs through RAMP Subcontractors**

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Two of the three subcontractors of the Roof Asset Management Program (RAMP) are working onsite replacing roofs at TA-3, building 32, and TA-16, building 260. They will execute about \$13 million in roof refurbishments this year. This work, which is part of a National Nuclear Security Administration program, also shows the Lab's commitment to a safe, productive onsite working environment and the Lab agenda.

## **SERF has Two Ways for Onsite Laboratory Employees to Obtain Surface Cleaner**

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The Sanitary Effluent Reclamation Facility (SERF) has two methods for onsite employees to gain access to its surface cleaner. Onsite employees can fill spray bottles from 5-gallon Igloo coolers. This new option is particularly helpful to employees who need multiple bottles of the cleaner at their work sites.

SERF has already been helping fellow onsite Laboratory employees maintain clean working areas by allowing such employees to pick up pre-filled bottles of this sanitizing solution on certain days of the week. As indicated by the CDC, SERF's surface cleaner effectively deactivates the COVID-19 virus. Essentially a sodium hypochlorite solution (same as household bleach), the cleaner is mixed from SERF's operating chemical supply — it has a concentration of the active ingredient consistent with CDC guidelines for an effective deactivating agent.

SERF collaborated with appropriate Environmental Safety Health Quality Safeguards Security staff to ensure that the solution is not only effective but also safe to use. The surface cleaner is effective for 7 days. This effort by SERF is a great example of how the Utilities and Institutional Facilities Division supports the Laboratory's daily mission.

## **Skype Instant Messaging Comes to the Classified Network**

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Skype for Business, a popular instant messaging application, is now available on the classified "Red" network.

Thousands of users across the Lab use Skype for Business on the internal unclassified "Yellow" network

to quickly and conveniently communicate. The upgrade will help streamline communication for Red network users and enhance their opportunities for collaboration. The enterprise-level tool has been fully integrated into the Red network classified computing environments, thanks to configuration efforts from the Network & Infrastructure Engineering (NIE) and eXperience IT (XIT) Divisions. Software Application Engineering (SAE) Division created and supports the SQL backend. Classified information up to Secret Restricted Data (SRD) may be communicated through Skype on the Red network. SIGMA 14, 15, 18, or 20 information **CANNOT** be transmitted through this tool. Red network users will be reminded of this policy with a pop-up any time they initiate an instant message from their Skype for Business client.

## Thousands of Pre-Triad Subcontracts Closed Out

Acquisition Services Management (ASM) Division assembled a team to address subcontract closeouts beginning in March 2020. After evaluating and categorizing subcontracts ready for closeout, the team succeeded in closing 1,300+ pre-Triad subcontracts in four days. Closeout tasks include updating the account within Oracle and reconciling any outstanding matters (such as balancing the account, following up on items not received, clearing any discrepancies between our records and the vendors, etc.). The group plans to close another 1,400+ pre-Triad subcontracts in the next two weeks. Subcontracts that began under Triad's management will be closed at the subcontract completion.

## Triad Receives Certification in Earned-Value Management System after Recent DOE Review

In April, Laboratory management received word that the earned-value management system (EVMS) certification previously held by Los Alamos National Security, LLC, was formally transferred to Triad National Security, LLC (Triad). The transfer occurred once Triad completed a set of defined corrective actions originally identified during a recent DOE review.

A systematic process, earned-value management evaluates *work performed* versus *work planned*. When used properly, it provides all management levels with the information needed to identify and respond to project and program issues in time to recover

and — eventually — to succeed. Receiving EVMS certification demonstrates that the Laboratory has placed adequate emphasis on the principles and importance of earned value.

A contractual requirement, EVMS confirms a contractor's compliance with federal regulations related to acquiring capital assets (i.e., construction projects). DOE's Office of Project Management regularly reviews the practices, policies, and procedures of the sites that it funds to ensure they are meeting these requirements. The last EVMS review at the Laboratory took place in 2017.

### COMMUNITY RELATIONS

## Coalition Launches Online Resource for Learning at Home

With school buildings closed across the region until the end of the academic year, a coalition has come together to launch an online hub for family-friendly learning in science, technology, engineering, arts, and math (STEAM) for Northern New Mexico.

The STEAM Hub of Northern NM website offers a range of selected resources to help parents, students, and teachers in STEAM learning at home, providing categorized links and activities from local partners such as STEM Santa Fe and Twirl play and discovery space in Taos, and from national organizations such as Khan Academy, PBS, and NASA.

The website project has been stewarded by the Community Learning Network (CLN) and the LANL Foundation, with support from the Laboratory's Community Partnerships Office, and Elizabeth Eppley, the CLN's Americorps VISTA student through the North Central New Mexico Economic Development Department.

The project includes a section for parents and a section for teachers. The parents' section includes a parents' guide to STEM. As part of the Laboratory's involvement, education specialists have compiled a growing list of resources for stay-at-home learning.

The section for teachers includes guides on creating video lessons, tools for online teaching, and information on how to facilitate learning for students without access to technology.

## Fighting Food Insecurity in the Region

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LANL has encouraged its employees to volunteer in their communities during the COVID-19 crisis. Laboratory employees have been volunteering with food distribution nonprofits in Santa Fe since March. The food distribution nonprofits include The Food Depot and Kitchen Angels, a nonprofit that prepares and delivers 190 meals a day to house-bound people in need.

The Kitchen Angels organization places a high priority on safety, especially as many of the people they serve are in a high-risk category for COVID-19. Distribution of the meals has also been rearranged to maximize social distancing. Rather than entering the building, delivery drivers come to the loading dock outside one at a time to pick up their meals for delivery.

Michael Middlemas, an R&D engineer in the Laboratory's materials science and technology division, states "I think it is great that LANL has encouraged employees to get out into the community and volunteer. With so many parts of life feeling out of control, it's nice to do something that I know is making a difference in someone's life right now."

## Laboratory and Santa Fe Community College Announce New Program for Machinists

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Los Alamos National Laboratory Director Thom Mason and Santa Fe Community College (SFCC) President Becky Rowley announced a collaboration creating a new training program for machinists at an online event April 16.

The 41-credit-hour program trains students to be precision machinists, who use computers, lathes, milling machines, and grinders to produce metal parts. Precision machinists often produce small batches of parts or one-of-a-kind items. The Federal Bureau of Labor Statistics predicts that in New Mexico and nationwide, machinist jobs will be in high demand over the next eight years. Salaries for Lab machinists range from \$56,000–\$80,000 per year. The training program begins with the Fall 2020 semester. Students will be reimbursed for tuition, fees, and books.

## Laboratory Employees Donate more than \$50,000 to Santa Fe's Food Depot for Hunger Relief

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The Laboratory concluded its first online-only Food Drive on April 10, and employees responded with true generosity, donating \$53,580 to help people in Northern New Mexico facing hardship because of the COVID-19 emergency.

Triad National Security, the Laboratory's management and operations contractor, contributed another \$10,000, bringing the grand total donated to nonprofit partner The Food Depot to \$63,580. Altogether, the money donated will provide more than 250,000 meals to people across Northern New Mexico.

The Food Depot provides essential hunger relief to the most vulnerable members of the community through a network of partners across Northern New Mexico. The organization is also offering staple food bags and fresh produce direct to families at drive-through food pantries that are open to the public.

## Laboratory, New Mexico Building and Construction Trades Council, and Taos Municipal Schools Announce New Job-Training Collaboration

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Laboratory Director Thom Mason, New Mexico Building and Construction Trades Council (NMBCTC) Executive Director Brian Condit, and Taos Municipal Schools Superintendent Lillian Torrez announced a collaboration creating a building-trades course for Taos High School students. Director Mason projects that the Laboratory will hire more than 1,200 craft or specialized building trade workers in the next five years.

Beginning in the fall of 2020, Taos High School students will be able to take a course specially designed to meet union standards. The course, paired with a high-school diploma, allows students direct entry into union apprenticeship programs at age 18. As apprentices, they will work full time at the Laboratory or with other employers at the starting salary of \$16/hour while receiving additional classroom and on-the-job training. Upon completion of the apprenticeship, trainees will be journeymen with starting salaries as high as \$72,000/year plus benefits. Participation in the course is free to students and paid for by the Laboratory.

# Meeting the COVID-19 Challenge Head On

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Los Alamos National Laboratory takes its responsibilities to the nation and to the communities where employees live very seriously. As one of the largest employers in Northern New Mexico, the Laboratory is doing what it can to answer the call to use our vast scientific and technical resources to help fight this disease, and protect its employees and the communities the employees call home.

To slow the spread of the virus, the Lab took early and aggressive measures to get as much of the workforce as possible offsite, working from home. More than 85 percent of the Laboratory's workforce is teleworking. The remaining employees are onsite because they are needed to assure the safety and security of the Lab's facilities or to perform essential national security work. For those onsite, measures are in place to keep them as safe as possible following CDC guidelines.

These measures are also helping to contain the spread of the virus in the communities where they live. About 75 percent of the Lab's employees live in Los Alamos, Rio Arriba and Santa Fe counties — where transmission rates have been lower than elsewhere in the state.

The Laboratory's HIV team is deploying its expertise in genetic databases and bioinformatics against COVID-19. Los Alamos has also partnered with Sandia and other national laboratories to develop an integrated COVID-19 pandemic monitoring, modeling, and analysis capability to provide disease forecasting. LANL is also testing and manufacturing ventilators, and evaluating the potential of 3D printing to produce scarce medical equipment.

## SELECTED MEDIA COVERAGE

### [Are Salt Deposits a Solution for Nuclear Waste Disposal?](#)

*Lab Manager (5/1)*

Researchers at Los Alamos National Labs have been working with the US Department of Energy and other national laboratories on one long-term, safe, disposal solution for nuclear waste—salt.

### [Studying Earth's Double Electrical Heartbeat](#)

*EOS (5/4)*

"You're looking at the total integrated effects of all the electrified weather across the globe," said Michael Peterson, a staff scientist at Los Alamos National

Laboratory in New Mexico who has studied the circuit with satellite lightning detectors. "People have described it as the electrical heartbeat of the planet."

### [Model Citizens - Scientists Join Together to Show the Power of Data in Fighting the COVID-19 Pandemic](#)

*Santa Fe Reporter (5/5)*

When Los Alamos National Laboratory scientist Sara Del Valle gives public presentations on her work, she often shows a clip from the film Contagion, in which a new bat-borne virus swiftly spreads from China to the rest of the world, swiftly and gruesomely killing many and crippling society while scientists race to curtail the spread and find a cure.

### [Cerro Grande Fire Remains Burned into New Mexico's Memory 20 Years Later](#)

*Santa Fe New Mexican (5/10)*

There also would be a report that a Los Alamos National Laboratory fire official told a Banderier supervisor not to do a prescribed burn May 4 because fuels were extra dry.

### [ORNL, LANL-Developed Quantum Technologies Go the Distance](#)

*Phys.Org. (5/12)*

For the second year in a row, a team from the Department of Energy's Oak Ridge and Los Alamos national laboratories led a demonstration hosted by EPB, a community-based utility and telecommunications company serving Chattanooga, Tennessee.

### [Predicting Mosquito Populations to Keep Diseases in Check](#)

*Scientific American Observations (5/12)*

At Los Alamos National Laboratory, we're studying the dynamics of mosquito populations to understand how they grow, how they change with the seasons and, in particular, how they spread infectious diseases to humans and to other animals.

### [Scientists Give Quantum Dot Solar Cells a Detox](#)

*New Atlas (5/18)*

Among their many uses, quantum dots have shown promise as photovoltaic materials in solar cells. Now, researchers at Los Alamos National Laboratory (LANL) have developed a new type of quantum dot solar cell that isn't made with the toxic elements found in most, while maintaining efficiency.

### [Why Artificial Brains Need Sleep](#)

*Inside Science (5/19)*

Artificial brains may need deep sleep in order to keep stable, a new study finds, much as real brains do...

However, conventional techniques used to rapidly train standard artificial neural networks do not work on spiking neural networks. “We are still learning how to train spiking neural networks to perform useful tasks,” said study lead author Yijing Watkins, a computer scientist at Los Alamos National Laboratory in New Mexico.

### **Nuclear Fission Identified as Best Way to Power a Moon Base**

*Engineering & Technology (5/21)*

The last decade has seen a team of scientists from Los Alamos National Laboratory, Nasa, and the US Department of Energy work on developing a new nuclear fission system that could produce at least 10 kilowatts of energy.

### **Visualizing Science: How Color Determines What We See**

*EOS (5/21)*

“Language is inherently biased, but through visualization, we can let the data speak for [themselves],” said Phillip Wolfram, an Earth system modeler and computational fluid dynamicist at Los Alamos National Laboratory.

### **The New and Improved Tomahawk Missile Now Runs on Corn**

*Popular Mechanics (5/26)*

One of the nation’s most prestigious national labs has developed a new fuel substitute for the same jet fuel that powers cruise missiles. Los Alamos National Labs has come up with a replacement fuel for JP-10 that uses corn bran and other feedstocks instead of petroleum products.

### **COVID-19, The Texas A&M System Responds**

*The Eagle (5/28)*

On the latest episode of “COVID-19: The Texas A&M System Responds,” Texas A&M Chancellor John Sharp interviews Dr. Thom Mason, director of the Los Alamos National Laboratory in New Mexico, about the Lab’s work in the fight against COVID-19. The Lab, which is managed by a group including the Texas A&M System, is doing some truly fascinating work...including making artificial human organs for vaccine testing.

### **New Software Predicts Power Loss During Natural Disasters**

*KRQE TV (5/28)*

Los Alamos National Laboratory has released new software designed to help predict power loss during natural disasters. The software takes into account the three major grid connections in the United States as well as substations that help deliver power. LANL says

the program will help the administrator’s become more efficient in restoring power to affected areas and in making sure power is delivered to other parts of the country that are connected to it.